15400 Calhoun Drive, Suite 400
Rockville, Maryland, 20855
(301) 294-5200
http://www.i-a-i.com

Intelligent Automation Incorporated

Enhancements for a Dynamic Data Warehousing and Mining System for Large-scale HSCB Data

Monthly Report No. 4

Reporting Period: June 21, 2016 – July 20, 2016

Contract No. N00014-16-P-3014

Sponsored by
ONR, Arlington VA
C⊙TR/TP⊙C: Dr. Rebecca Goolsby

Prepared by
Onur Savas, Ph.D.

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Enhancements for a Dynamic Data Warehousing and Mining System Large-Scale HSCB Data

Submitted in accordance with requirements of
Contract #N00014-16-P-3014

Performance period: June 21, 2016 to July 20, 2016
(PI: Dr. Onur Savas, 301.294.4241, osavas@i-a-i.com)

1 Work Performed within This Reporting Period

In this reporting period, we performed the following tasks.

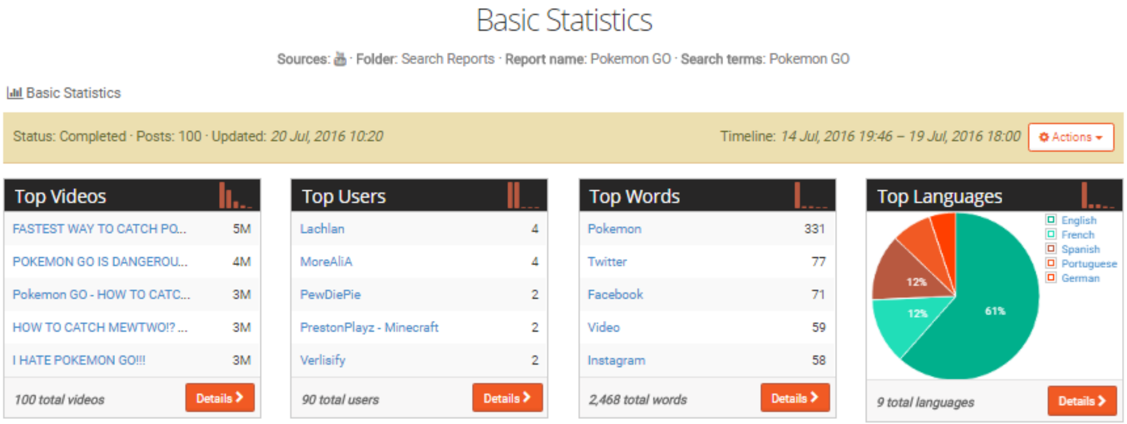
- **Developed YouTube Analytics Capabilities.** We have developed computation of YouTube basic statistics including Top Videos, Top Users, Top Words, and Top Languages, and also applied NER to the text associated with YouTube posts. We have also developed UI for interactive display, and designed map and media gallery views.

- **Released Scraawl 1.16.**

1.1 Development of YouTube Analytics and UI

1.1.1 YouTube Top K Statistics Computation and View

We have developed a fast and reliable computation of Top K statistics for YouTube videos. In particular, we compute Top Videos, Top Users, Top Words, and Top Languages. In all cases, “Top” refers to higher count. Similar to other data sources, we have also implemented a UI to show and interact with these statistics. Figure 1 shows a representative view of the UI. Top Videos, Top Users, and Top Words are shown as lists while Top Languages are shown as a pie chart. Every Top K Statistics also include a drill-down menu, where users can access using the “Details” button. In the drill-down menu, users can see Top 50 statistics and other relevant metrics. Also, users can filter to include or exclude the relevant posts.



Basic Statistics

Sources: · Folder: Search Reports · Report name: Pokemon GO · Search terms: Pokemon GO

Basic Statistics

Status: Completed · Posts: 100 · Updated: *20 Jul, 2016 10:20* Timeline: *14 Jul, 2016 19:46 – 19 Jul, 2016 18:00* Actions

Top Videos	
FASTEST WAY TO CATCH PO...	5M
POKEMON GO IS DANGEROU...	4M
Pokemon GO - HOW TO CATC...	3M
HOW TO CATCH MEWTWO!? ...	3M
I HATE POKEMON GO!!!	3M
100 total videos	Details

Top Users	
Lachlan	4
MoreAliA	4
PewDiePie	2
PrestonPlayz - Minecraft	2
Verlisify	2
90 total users	Details

Top Words	
Pokemon	331
Twitter	77
Facebook	71
Video	59
Instagram	58
2,468 total words	Details

Top Languages

9 total languages Details

Figure 1: Representative Top K Statistics for YouTube Videos.

1.1.2 YouTube Timeline View

Similar to the other data feeds, we have developed a timeline view that shows the number of posts. The timeline view is interactive and the selected portion can be filtered using “Filter By Range” as shown in Figure 2.

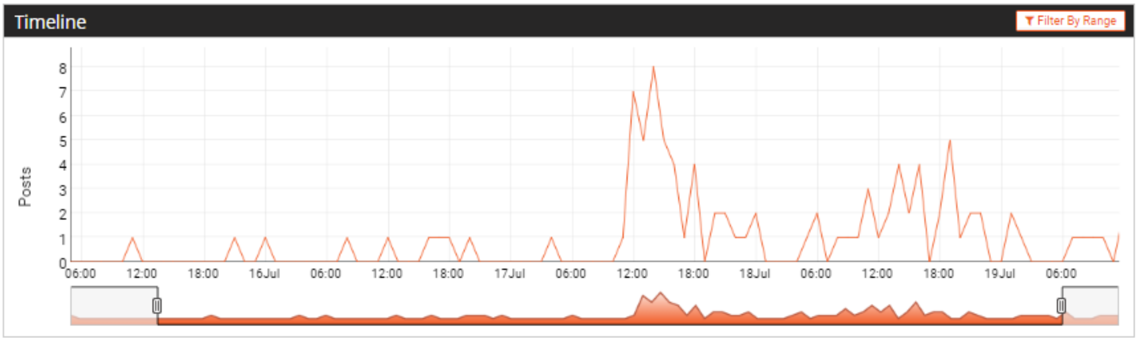


Figure 2: Representative Timeline View.

1.1.3 YouTube Media Gallery View

We show the snapshots of the Top 50 videos in a grid under “Media Gallery” view. The video snapshots are clickable and each click directs the user to a page that has statistics about video. A representative media gallery view is shown in Figure 3.

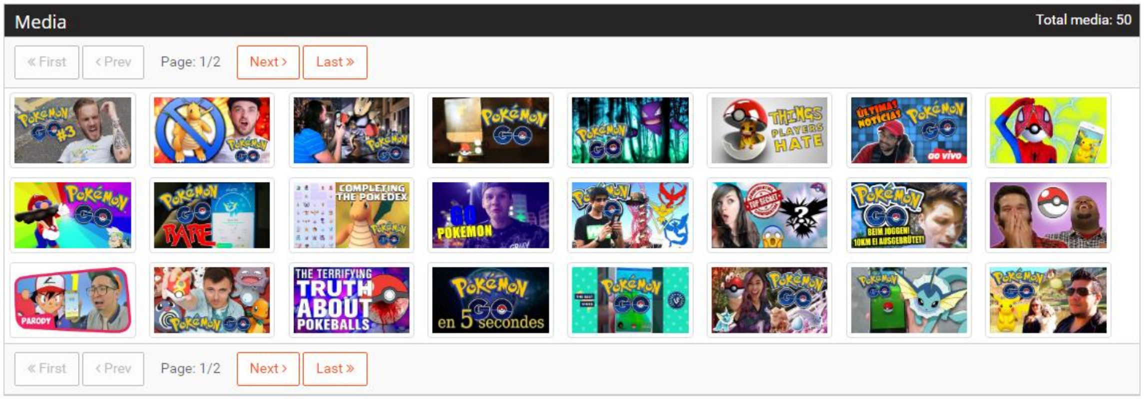
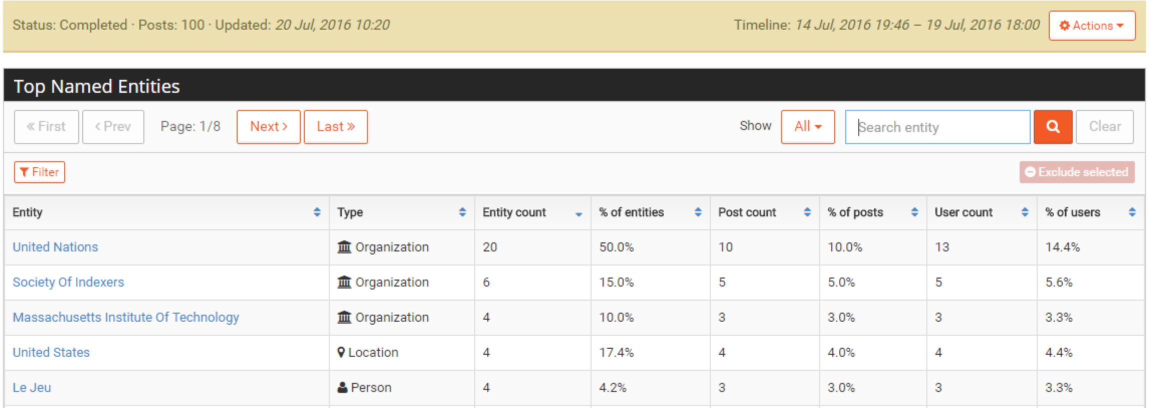


Figure 3: Representative Media Gallery View.

1.1.4 YouTube Named Entity Recognition (NER) View

We perform Scraawl's NER algorithm to the text associated with YouTube post, which classifies the named entities into organizations, locations, and persons. Scraawl's NER also performs abbreviation extensions, e.g., UN is mapped to "United Nations." A representative NER view along with other statistics is shown in Figure 4.



Status: Completed · Posts: 100 · Updated: *20 Jul, 2016 10:20*

Timeline: *14 Jul, 2016 19:46 – 19 Jul, 2016 18:00*

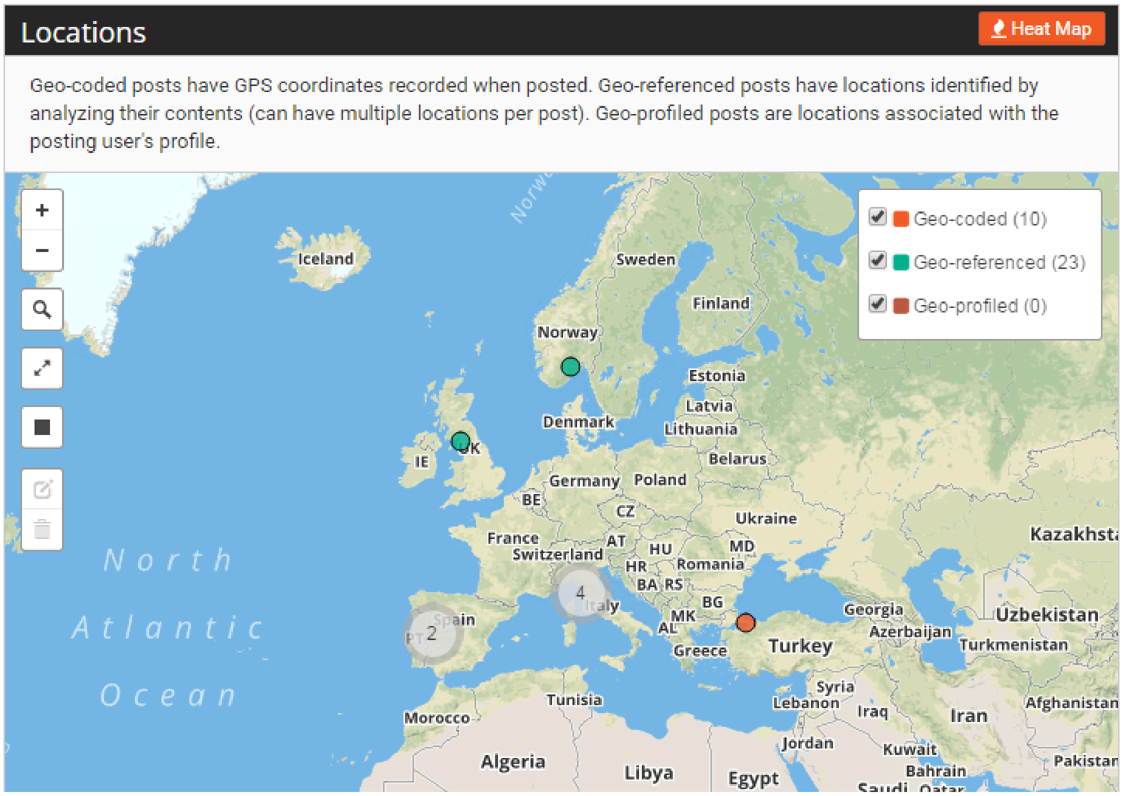
Top Named Entities

Entity	Type	Entity count	% of entities	Post count	% of posts	User count	% of users
United Nations	Organization	20	50.0%	10	10.0%	13	14.4%
Society Of Indexers	Organization	6	15.0%	5	5.0%	5	5.6%
Massachusetts Institute Of Technology	Organization	4	10.0%	3	3.0%	3	3.3%
United States	Location	4	17.4%	4	4.0%	4	4.4%
Le Jeu	Person	4	4.2%	3	3.0%	3	3.3%

Figure 4: Representative NER View.

1.1.5 YouTube Map View

We use Scraawl's Location Map and Heat Map view to display geolocation information about YouTube videos. In particular, we show geo-coded and geo-referenced YouTube posts. Geo-coded posts are those which have GPS information on them while geo-referenced posts are those which mention location information. A representative Map view is shown in Figure 5.



Locations

Heat Map

Geo-coded posts have GPS coordinates recorded when posted. Geo-referenced posts have locations identified by analyzing their contents (can have multiple locations per post). Geo-profiled posts are locations associated with the posting user's profile.

☑ 🟧 Geo-coded (10)

☑ 🟩 Geo-referenced (23)

☑ 🟥 Geo-profiled (0)

Figure 5: Representative Map View.

2 Current Problems

None.

3 Work to be Performed in the Next Reporting Period

In the next report period, we will focus on the following tasks:

- We will develop an API for news feed collection.
- We will deliver Scraawl 1.17.